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Remarks

Receipt is acknowledged of the Office Action of June 15, 2006 in the above-captioned application. Reconsideration of the application and a three month extension of the time provided for response are respectfully requested. The Commissioner is hereby authorized to debit all amounts deemed required from Deposit Account No. 50-1604.

In the Office Action, claims 1-39 were rejected pursuant to 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a). Please note, however, that claims 1- 22 were cancelled in the Preliminary Amendment dated August 19, 2003. Accordingly, the remarks below address claims 23-39, which are the only claims believed to remain pending. However, if we are mistaken and further response is needed from the applicant regarding claims 1-22, clarification is requested.

Rejections Under 35 U.S.C. §112

In the Office Action, various of the claims were rejected under 35 U.S.C. §112, second paragraph. Further thereto, claims 23-39 have been amended to address the Examiner's rejections.

With respect to the rejection in paragraph 4, the reasoning for the rejection of the term "said assay format is a blot" or "said assay format is a microarray" was not specifically identified in the Office Action. It is submitted that the prior language conformed with the requirements of §112 based on the language of the claims and the specification. However, to overcome the rejection and facilitate an allowance, claims 23, 31, and 32 have been amended as set forth above.

With respect to the language "single channel detection" and "dual channel detection" in claims 33 and 34, respectively, those terms were likewise explained in the specification. *See e.g.*,

specification at p. 28. However, to facilitate removal of the rejection, the claims have been amended with further language relating to the properties of the claimed detection methods. Also, claim 33 has been amended to recite dual channel detection, and claim 34 has been amended to recite at least three channel detection.

In addition, the term "reusing an assay" in claim 23 has been removed from the preamble to overcome the rejection thereon of claims 23-39.

Accordingly, reconsideration and withdrawal of the rejections under §112 is respectfully requested.

In addition, some further amendments have also been made to the claims, as set forth above, although not required by the Office Action. In particular, amendments have been made to avoid the use of the terms probe and target for slightly improved clarity, and to otherwise improve the claims' clarity and scope.

Rejections Under 35 U.S.C. §103(a)

In the Office Action, the pending claims were also rejected under 35 U.S.C. §103(a) based upon U.S. Patent No. 5,057,410 (Kawasaki, et al.) in view of US Patent Application No. 2004/0219569 A1 (Yehiely, et al.), U.S. Patent No. 5,508,188 (Barsky, et al.) and U.S. Patent No. 6,110,687 (Nilsen). Reconsideration of the rejections is respectfully requested.

In the Office Action, those references were cited against the present application on the grounds that it would have been obvious to combine the methods of Kawasaki, Yehiely, Barsky, and

Nilsen to achieve the present invention. However, the present invention is not comparable to those methods, and is not taught, suggested or motivated by the disclosures therein.

Previously, to reuse a support already used for an assay, a researcher have removed hybridized probe from that support. This is evidenced by the various references cited by the Examiner. In the cited disclosure at col. 14 of Kawasaki, for example, Kawasaki discusses the fact that the blot was stripped of the CML III probe and rehybridized with a CML IV oligonucleotide probe. *See,* Kawasaki col. 14, lines 47-50. Likewise, in paragraph 0234 of Yehiely, the applicant indicates that the probe was stripped off by adding boiling solution of 0.5% SDS, which is again a reference to removal of the probe. Barsky appears to teach a similar technique, involving washing twice with near boiling 0.1xSSC, 0.1% SDS.

In those methods, thorough removal of probe molecules is essential to reuse of the support. In contrast, in Dr. Getts' invention, the molecule which must be removed is not the probe, but is a labeled dendrimer. *See*, claim 23, clause b. Thus, in Dr. Getts' method a blot or microarray can be reused regardless of whether probe molecules remain present from prior experiments.

This is entirely contrary to the methods disclosed in Kawasaki, Yehiely, or Barsky. In those methods, if probe from the first assay remained on the support, any future experiments would be compromised. The presence of probe from the first assay would prevent reuse of the array, since that residual probe would contaminate the data in subsequent experiments.

Furthermore, in the method of the present invention a researcher can take advantage of both probe stripping and degradation of the dendrimer, without concern whether or not probe stripping is complete. Under the chemical conditions used during probe stripping, the dendrimer falls apart

and the labels float away. However, whether probe is effectively removed or whether some (or even all of it) is left behind on the support, the presence of that probe does not interfere with subsequent assays, because the labeled first dendrimer is no longer present.

The present invention is further non-obvious since it is submitted that the method of probe stripping relied on by the Office Action is only useful with respect to blots, compared to the present invention which can be used with blots or with microarrays. In particular, stripping the probe off the support can be very difficult after the support dries. Although blots are usually not dried, microarrays are conventionally spun dry as one of the steps during the assay. With a microarray, a researcher can normally strip some probe off the array, but not all of it, because of that drying step. As a result, it is submitted that the cited methods would not have a reasonable expectation of success with microarrays, unlike the present method which can be used with those arrays and is very effective with them.

Furthermore, the cited methods have numerous disadvantages. For example, the methods of the cited references require relatively harsh conditions (such as application of a boiling solution, *see e.g.,* Yehiely, paragraph 0234, line 16-17), and require complete success in probe removal. The dates of the references and disadvantages of prior techniques demonstrate that there has been a long need for an improved method which can be used, for example, even when probe removal is not complete. That long felt need further demonstrates that the present invention was not obvious to one of ordinary skill at the time the present invention was made. The present invention improves the efficiency and ease of reuse of blots and microarrays in a manner which was not previously appreciated.

Moreover, in the present invention support reuse can be efficiently effected through separation of a short base pair hybrid between a capture sequence located on the probe or target and the complementary sequence attached to a capture reagent, rather than the separation of a much stronger bond consisting of an extensive series of hundreds or thousands of base pair hybridizations between probe and target as in the cited references. Yet again, despite the need for an improved method and the benefits thereof, there is no indication that such a method for reusing blots as claimed herein was previously recognized or appreciated by those in the art.

In fact, when a sample is prepared for an assay, the nucleic acid in the sample is generally labeled using a non-labile covalent bond or another method (such as using radioisotopes) which is difficult to reverse. In view thereof, a considerable difficulty would normally be associated with removal of label from the probe, such that one of skill would normally not be led to the claimed method, which contrarily does focus on removal of label (even if the probe is left in place). By overcoming the shortcomings in prior methods through the removal of labeled dendrimer as recited in the claims, rather than through removal of labeled probe, applicant has developed a significantly superior approach which constitutes non-obvious invention.

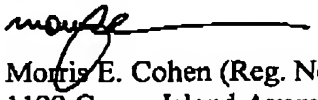
Thus, it is submitted that the present method is entirely non-obvious over the cited references, and is a significant improvement over them. The significant advantages and improvements provided by the invention are not taught or suggested in any of the references cited, either individually or when properly considered in combination. Even if one were to combine the references as suggested by the Office Action, the combined teachings would lead one to a method that involves removal of

probe from the support (and all of that probe), in contrast to the present invention in which the presence of probe on the support does not pose any difficulty. Likewise, the claimed method can even be used with microarrays, a further advantage which is not apparent from the references, whether considered individually or in combination.

Accordingly, in view of the foregoing, reconsideration of the rejections and favorable action on the application is respectfully requested.

Dated: December 14, 2006

Respectfully submitted,



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